

# ABSTRACT OF THE DISCLOSURE

A device (6) and a method for generating chlorine trifluoride is described, a high-density plasma (105) being generated in the interior of a plasma reactor (100) using plasma generating means (110, 120, 130, 150, 155, 160, 170, 180), and a first gas and a second gas, which react with one another under the influence of the high-density plasma (105) in the plasma reactor (100) under the formation of chlorine trifluoride, being supplied to the plasma reactor (100) via gas supply means (21, 22, 25, 26). In addition, a gas outlet (20) is provided, via which the generated chlorine trifluoride can be removed from the plasma reactor (100). Finally, a system (5) for etching semiconductor substrates (30), silicon wafers in particular, is described including such an upstream device (6), the system (5) having a process chamber (10) which is connected to the plasma reactor (100) via the gas outlet (20), and the semiconductor substrate (30) being situated in the process chamber (10) and exposed to the gaseous chlorine trifluoride generated by the device (6).